High Speed Data Classification System

ABSTRACT

An optical network packet classification architecture is disclosed that addresses the packet classification requirements for OC-768 optical routers and beyond. The herein disclosed system is used for ultra-high speed packet classification of optical data at either the serial data stream level for maximum performance, or after it has been converted into parallel words of data. The presently preferred embodiment of the invention provides a system that operates in the receive path, where electronic data are provided by the optical interface to the data framer. The invention incorporates unique features into a traditional optical data framer chip and relies on a complex ASIC to permit the user to differentiate between up to 10,000 different patterns at ultra-high speeds. One purpose of the general purpose system disclosed herein is to eliminate the need for costly and power consumptive content addressable memory systems, or customer pattern specific ASICs, to perform network packet classification. The system operates on a principle of adaptive programmable randomization to permit a differentiation between the input vectors to be made. The invention dramatically reduces the processing burden required by high-speed optical routers or switches.